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ABSTRACT

This study was to conducted to define how metatags are used by Ohio public library webmasters and to determine the de facto standard for metatag usage. The 106 Ohio public library World Wide Web sites accessible through the Ohio Public Libraries Information Network (OPLIN) were evaluated using a statistical analysis of the HTLM code and content of the metatags. The number of library web pages that did or did not use metatags was counted, and the pages with metatags were divided into four groups--generated, standard, mixed, and free. Frequencies of the following types of meta fields were examined: (1) content fields, including title, subject, description, source, language, relation, and coverage; (2) intellectual property fields, including author, publisher, other contributor, and rights management; and (3) instantiation fields, including date, resource type, format, and resource identifier. Results are presented in table and percentage chart forms. Findings indicated that 45.3% of the libraries used metatags which were automatically generated by software tools for web page design, and 41.5% of the libraries did not use metatags at all. Frequency of metatag fields included were: content (59%), intellectual property (27%), and instantiation (14%). Results indicated that the de facto standard includes keywords, description, author, and date fields. (DLS)

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ED 424 858

EVALUATION OF METATAGS OF WEB SITES OF THE OHIO PUBLIC LIBRARY NETWORK

A Master's Research Paper submitted to the
Kent State University School of Library
and Information Science
in partial fulfillment of the requirements
for the degree Master of Library Science

by

Volodymyr Karpenko

July, 1998

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ABSTRACT

Web page metatags are considered important for meeting the requirements of modern web page design and for effective information retrieval. Evaluation of the Ohio public libraries web sites has been done from the point of view of what their metatags contain.

The goal of the study was to define how metatags were used by web masters and to try to find out the de facto standard for metatag usage. By means of a statistical approach the number of libraries which used metatags for their web sites was estimated and evaluated.

It became clear that a large share (45.3%) of the libraries used metatags which were automatically generated by software tools for web page design. A high percentage of the libraries did not use metatags at all (41.5%). In order to evaluate usage and to find the tendency of metatag implementation, a study of metatag fields was conducted. It revealed that the most used information in metatags was the content of the page (59%), then intellectual property (27%), and instantiation (14%).

Master's Research Paper by

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M.L.S., Kent State University, 1998

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CHAPTER I

INTRODUCTION

Evaluation of the Internet resources has long been and still is a topic of interest to all kinds of information specialists and librarians. The library has to keep up with the evolution and growth of the Internet and the World Wide Web and their resources and to consider them as an important part of published knowledge. Certainly not every web site or page may be considered as suitable library material. Much has been done by different kinds of information specialists to establish criteria and standards for evaluating Internet resources. As a result of these attempts there are many evaluation "questionnaires" which range from simple to very substantial and sophisticated.

Rationale/Need for the Study

Prior studies in this field have dealt with either evaluation of the content of the certain Internet resource or the quality of web page design. There are a lot of books, articles, and web sites about good and bad web page designs. But less has been done on the evaluation of HTML code of the web site and usage of the HTML tags which allow the creator to index the information available at the site. Search engines automatically create a database of indexing words of the content of a web site by looking at word frequency and sometimes by looking at its position in a document (e.g. in a title). But when the search engine uses it to find information it is not usually the best and certainly not the most effective way to

collect information about web sites. When a user searches from a search engine or directory, the user enters words into a text box and presses the Search button. The words that the user enters are referred to as keywords. The server at the site that is being searched looks within its database for records that include those keywords. It then creates a page that lists some or all of the records that it found and includes links to the locations of those records.

Search engines follow a set of rules, with the main rules involving the location and frequency of keywords on a web page. They check to see if the keywords appear near the top of a web page, such as in the headline or in the first few paragraphs of text. They assume that any page relevant to the topic will mention those words right from the beginning.

Frequency is the other major factor in how search engines determine relevancy. A search engine analyzes how often keywords appear in relation to other words in a web page. Those with a higher frequency are often deemed more relevant that other web pages.

The search engines and directories acquire their lists of keywords from several places. The most common method involves submissions. Many sites ask for a description of one's site when one submits his/her URL (Uniform Resource Locator), and they acquire keywords from within that description. Some sites provide separate boxes for you to enter your keywords.

Some search engines use automated software programs (known as robots, spiders or crawlers) to gather information about web pages. Some of these robots can read the text of web pages then store keywords and other

information from the pages into their databases. Everything the spider finds goes to the index or catalog. Search engine software looks through the millions of pages recorded in the index to find matches to search and rank them in order of what it believes is more relevant.

In addition to location/frequency, some search engines may give a page a relevancy boost based on link popularity or other factors. These help a little, but they don't guarantee a boost to the top. It is quite possible that the most linked-to page on the web will still perform poorly if there is another page that is more relevant to the particular query.

Of course, the search engines do not always do the searches right. Non-relevant pages may appear on the result screen, and sometimes it may take a long time and more digging to find the information one is looking for. Unlike humans, search engines do not have ability to ask a few questions to focus the search. They also can not rely on judgment and past experience to rank web pages in the way humans do. Intelligent search engines are moving in this direction, but there is long way to go.

There are several things one can do to one's web site that will prepare it and help it to be found when users do searches. These involve adding keywords to one's pages within the first paragraph, within hidden meta fields, specifying "type," "source," and "use," etc., and including keywords with your submissions.

To improve the situation with indexing web pages several standards (e.g. Dublin Core Metadata Elements Set) have been established for so-called HTML metatags (an HTML tag used in the <HEAD> area of a document to specify

further information about the document, either for the local server, or for a remote browser) which are written by the web page authors and can represent the actual content and supporting information about the page. There are several metatags, but the most important for search engine indexing are the <*description*> and <*keywords*> tags. The description tag returns a description of the page in place of the summary the search engine would ordinarily create. The keywords tag provides keywords for the search engine to associate with the web page. Usage of these tags is still optional and is not necessarily required for web page functionality and registration or submission on the search engine but allows the search engine to more accurately index web pages.

When a search engine uses a robot to gather information about one's pages, they store the first few words (up to 200 characters) or more (depending on the search engine design) they find on one's pages. These words are used as the pages keywords and are often presented as a description of one's page. But often the first few sentences of a web page do not serve as a summary or description of the page.

Although the trend is towards graphical pages, a page that includes all graphics and no or little text will not likely be found during a search from many sites that use these robots to gather information. Likewise, a site that has a little or no keywords will not likely be found either. In this case the use of a metatags is essential.

When designing a page, the author should try to use as many valuable keywords as possible and include them within the first text that appears on the page, but to avoid spamming.

Implementation of metadata could help search engines to recognize and index one's web site properly. Movement toward including meta information in web page code will allow in the future to stabilize information about the web and as consequence to achieve consistency of searching results. At the present not all search engines support metatags but several of the main search engines do (e.g. AltaVista, HotBot, InfoSeek, Lycos, Northern Light). Metadata for these engines is one of the most important factors that affect how a page is listed.

Using these tags one could achieve better results for recognition of one's site and reduce the noise among searching hits.

Purpose of the Study

The purpose of this study is to determine the scope of usage of the metatag information inside the web pages and to find out the de facto standard for metatags.

Definition of the Terms

HTML stands for HyperText Markup Language - common language for web page design and electronic publishing on the Internet.

To evaluate meta information inside the web pages the following terminology was established for metatags:

1. *Generated* - metatags which are automatically generated by the software tools for web design. Usually this information contains labels of software tools (e.g. Netscape, Microsoft FrontPage, etc), version number, browser code number and so on. This information is typically of no use for web page indexing purposes.
2. *Standard* - metatags which scope, structure, organization, and content meet requirements of one of the standards for meta information (e.g. Dublin Core Metadata Elements Set).
3. *Mixed* - conjunction of generated and some additional metatags.
4. *Free* - free format set of metatag(s) which does not belong to any standard.
5. *None* - metatags are not used.

Limitations of the Study

The study was limited to and was conducted on the set of Ohio public libraries web sites which one could access through OPLIN (Ohio Public Libraries Information Network). Ohio regional library system web pages have not been included.

Information about the web sites has been supplied to the State Library of Ohio by Ohio public libraries.

This information was accurate and up-to-date for 7/6/1998.

CHAPTER II

LITERATURE REVIEW

The extensive growth of the Word Wide Web gave birth to an enormous amount of literature about web page design, searching techniques, and hints. Almost every book about HTML language contains examples of bad and good pages and a discussion of how to make a good web page. The central point of web design is to present one's information on it clearly and to support the reader with relevant navigating tools (Lynch 1996). Implementation of metatags inside one's web page is optional and unnecessary, but is considered as "good style" in web page design (Waters 1996).

On the other hand many efforts have been done by librarians and information specialists to establish the criteria for evaluating web sites. These criteria generally deal with content of the information and its accuracy. Much attention is paid to "information structure and design, relevance and scope of content, validity of content, accuracy and balance of content" (Smith 1997). Other criteria looks for "resource identification and documentation, author identification, authority of author" (Wilkinson, Bennet, Oliver 1997).

But all these publications are dedicated either to quality of information put on the web or web design itself. They evaluate what the reader could or could not see on the computer screen or how easy he/she could retrieve relevant and reliable information.

Now it became clear that it is impossible to manually evaluate and to index all Internet resources taking into account that each day hundreds new web sites appear on the web. That is why different kinds of automatic software tools for collecting information about web sources came into being. To improve the situation there is a need for meta information or metadata about web sites that these automatic software tools could employ.

Metadata is "information about data." That is, metadata describes some aspect of data on the Internet. Metadata is data which describes attributes of a resource. Typically, it supports a number of functions: location, discovery, documentation, evaluation, selection and others. It is recognized that in an indefinitely large resource space, effective management of networked information will increasingly rely on effective management of metadata. Increased commercialization and complexity of information resources makes this need all the greater. There has been significant activity recently on defining the semantic and technical aspects of metadata for use on the Internet and WWW. A number of metadata sets have been proposed together with the technological framework to support the interchange of metadata. This framework supports the use of conventions that will facilitate modular interoperability among separate metadata element sets. These conventions include standard mechanisms for representing semantics that are grounded in a data model. It additionally provides a means for publishing both human-readable and machine-processable vocabularies. Vocabularies are the set of properties, or metadata elements, defined by resource description communities. The ability to standardize the

declaration of vocabularies is anticipated to encourage the reuse and extension of semantics among information communities. These initiatives will have a dramatic effect on how the Web is indexed and will improve the discovery of resources on the Internet by a significant factor (Miller 1998).

The World Wide Web affords unprecedented access to globally distributed information. The use of metadata improves discovery of and access to relevant information. The effective use of metadata among applications, however, requires common conventions about semantics, syntax, and structure (Iannella and Waugh 1997).

One of the most well-known projects for implementing meta information in web pages is the Dublin Core Metadata Elements Set. The Dublin Core is a 15-element metadata element set intended to facilitate discovery of electronic resources. Originally conceived for author-generated description of Web resources, it has also attracted the attention of formal resource description communities such as museums and libraries. The Dublin Core is intended to be usable by non-catalogers as well as by those with experience with formal resource description models. Most of the Dublin Core elements have commonly understood semantics that represent what might be described as roughly equivalent to a catalog card for electronic resources. Although initially motivated by the need for author-generated resource description, the Dublin Core includes sufficient flexibility to encode the additional structure and more elaborate semantics appropriate to more formal resource description applications.

The Dublin Core metadata elements fall into three groups which indicate the class of information stored in them:

(1) elements related mainly to the Content of the resource,

(2) elements related mainly to the resource when viewed as Intellectual Property,

(3) elements related mainly to the Instantiation of the resource.

These elements are as follows.

1. Content group.

- Title: label <*title*>.

The name given to the resource, usually by the Creator or Publisher.

- Subject and keywords: label <*subject*>.

The topic of the resource. Typically, subject will be expressed as keywords or phrases that describe the subject or content of the resource. The use of controlled vocabularies and formal classification schemes is encouraged.

- Description: label <*description*>.

A textual description of the content of the resource, including abstracts in the case of document-like objects or content descriptions in the case of visual resources.

- Source: label <*source*>.

Information about a second resource from which the present resource is derived. While it is generally recommended that elements contain information about the present resource only, this element may contain a

date, creator, format, identifier, or other metadata for the second resource when it is considered important for discovery of the present resource.

- Language: label *<language>*.

The language of the intellectual content of the resource.

- Relation: label *<relation>*.

An identifier of a second resource and its relationship to the present resource. This element permits links between related resources and resource descriptions to be indicated.

- Coverage: label *<coverage>*.

The spatial or temporal characteristics of the intellectual content of the resource.

2. Intellectual property group.

- Author or creator: label *<creator>*.

The person or organization primarily responsible for creating the intellectual content of the resource.

- Publisher: label *<publisher>*.

The entity responsible for making the resource available in its present form, such as a publishing house, a university department, or a corporate entity.

- Other contributor: label *<contributor>*.

A person or organization not specified in a *<creator>* element who has made significant intellectual contributions to the resource but whose

contribution is secondary to any person or organization specified in a <*creator*> element.

- Rights management: label <*rights*>.

A rights management statement, an identifier that links to a rights management statement, or an identifier that links to a service providing information about rights management for the resource.

3. Instantiation group.

- Date: label <*date*>.

A date associated with the creation or availability of the resource. Such a date is not to be confused with one belonging in the <*coverage*> element, which would be associated with the resource only insofar as the intellectual content is somehow about that date.

- Resource type: label <*type*>.

The category of the resource, such as home page, novel, poem, working paper, technical report, essay, dictionary.

- Format: label <*format*>.

The data format of the resource, used to identify the software and possibly hardware that might be needed to display or operate the resource.

- Resource identifier: label <*identifier*>.

A string or number used to uniquely identify the resource (e.g. URL).

To promote global interoperability, a number of the element descriptions suggests a controlled vocabulary for the respective element values. It is

assumed that other controlled vocabularies will be developed for interoperability within certain local domains.

A metadata element's meaning is unaffected by whether or not the element is embedded in the resource that it describes.

The wide diversity of metadata needs on the Web requires an environment that supports the coexistence of many independently developed and maintained metadata packages. The Dublin Core is targeted specifically towards resource discovery, but other, functionally distinct, packages will evolve (for example, terms and conditions, archival management, administrative metadata, and many others).

Librarians show growing interest in meta information as an important indexing tools for finding and evaluating Internet resources (Caplan and Gueuther 1996).

Catalogers and other information professionals conclude bibliographic information as necessary for electronic publications. Descriptors identified in the Dublin Core and embedded within metatags of electronic document may be combined to produce a list of electronic citation elements. Cataloging librarians could contribute their expertise in information resources management to documents being prepared for WWW in order to influence the quality of electronic publication from the inside. (Clemson 1997).

Ohio Public Library Information Network policy implements some evaluation criteria for registration of new library web sites in OPLIN. But there are no requirements for meta information.

Although there are many literature items related to metadata and the movement toward using meta information is very strong (especially among adherents of the new emerging Internet standard XML - Extensible Markup Language) there is still ignorance about it among the web masters and designers. One could find many publications with evaluations of the certain web sites but almost nothing about evaluation of the metadata inside them. Metatags are invisible when one looks at the web page, but are important for indexing purposes and indirectly for effective web searching.

CHAPTER III

METHODOLOGY

The study represents survey of Ohio public libraries web pages HTML code and content analysis of the metatags information of these pages.

While examining web pages the quantity of libraries which either use or not meta tags was counted.

All pages with metatags were divided on four groups (generated, standard, mixed, free) according to content of the metatag information. Frequencies of certain types of metatags were estimated and results were represented in table and percentage chart forms.

CHAPTER IV

RESULTS

There are 250 public libraries in Ohio but many of them do not yet host a web site or make their automated online catalogs available on the Internet. There are libraries which have only web site, libraries with only Internet accessible online catalog or libraries which have both facilities. This data is shown in the Table 1 and Figure 1.

Table 1. Number of Ohio public libraries that have web sites and/or Internet accessible catalogs.

Internet Access	Number of Libraries	%
WW	106	72%
Online catalog	85	58%
WWW + Online catalog	44	30%

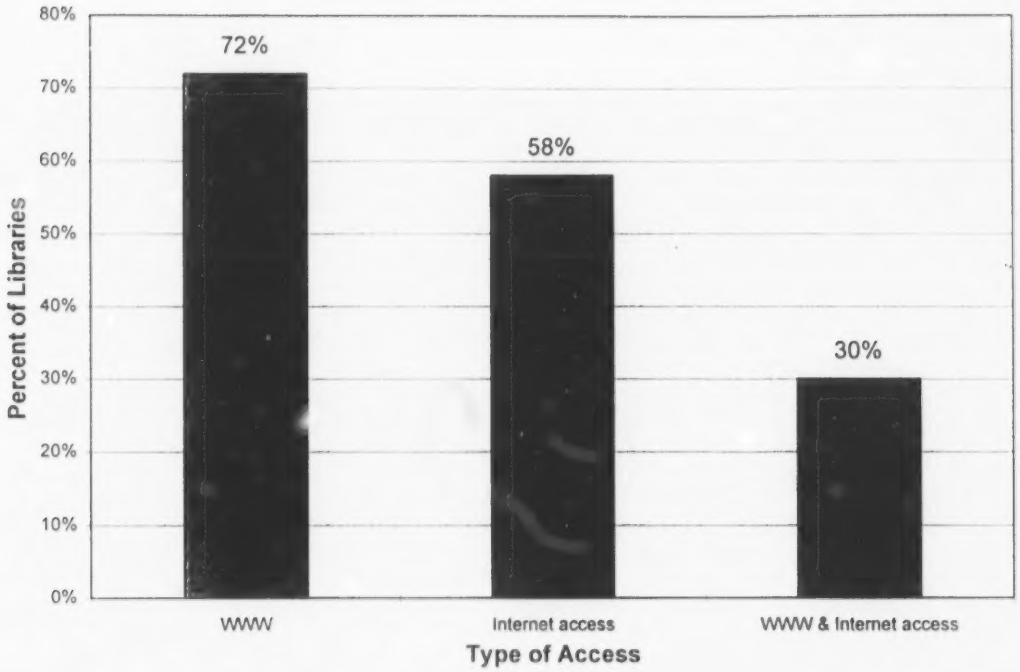

Figure 1. Percentage of Ohio public libraries that have web sites and/or Internet accessible catalogs chart.

For the purposes of the study we are interested in analyzing of 106 Ohio public libraries which host a web site.

The Table 2 below represents results of examining HTML code of the library web pages. Attention has been paid to use of metatag information of the pages. Each web site was marked either as "none" (no meta information) or as dedicated to one of four groups (generated, standard, mixed, free) according to metatag content. Additional information about web page metatags is presented in comment column.

Table 2. Listing of Ohio public libraries indicating metatag usage.

Library Name *(City, OH)*	Web Site URL	Metatags	Comments
Akron-Summit County Public library *(Akron, OH)*	*http://www.neo.lrun.com/Akron_Summit_County_Public_Library/*	none	
Alexandria Public Library *(Alexandria, OH)*	*http://mocin.denison.edu/libraries/alex/alexhome.htm*	none	
Alger Public Library *(Alger, OH)*	*http://www2.wcoil.com/~adanet/algerlibrary.html*	generated	
Andover Public Library *(Andover, OH)*	*http://www.andover.lib.oh.us/*	generated	
Ashland Public Library *(Ashland, OH)*	*http://www.ashland.lib.oh.us/*	generated	
Ashtabula County District Library *(Ashtabula, OH)*	*http://www.ashtabula.lib.oh.us*	generated	
Avon Lake Public Library *(Avon Lake, OH)*	*http://www.kellnet.com/allib/alpl.htm*	none	
Bellevue Public Library *(Bellevue, OH)*	*http://www.bellevue.lib.oh.us*	none	
Birchard Public Library *(Fremont, OH)*	*http://www.birchard.lib.oh.us/*	none	
Bluffton-Richland Public Library *(Bluffton, OH)*	*http://library.norweld.lib.oh.us/Bluffton/*	mixed	generated + <keywords>
Briggs Lawrence County Public Library *(Ironton, OH)*	*http://www.lawrence.lib.oh.us*	none	
Bristol Public Library *(Bristolville, OH)*	*http://www.bristol.lib.oh.us*	generated	
Brumback Library *(Van Wert, OH)*	*http://brumbacklib.com/*	none	
Carnegie Public Library *(East Liverpool, OH)*	*http://www.carnegie.lib.oh.us*	free	<keywords>
Chillicothe and Ross County Public Library *(Chillicothe,OH)*	*http://chillicothe.lib.oh.us*	none	
Clark County Public Library *(Springfield, OH)*	*http://www.ccpl.lib.oh.us/*	mixed	generated + <author>
Cleveland Hts-University Hts Public Library *(Cleveland Heights, OH)*	*http://www.chuhpl.lib.oh.us*	generated	
Cleveland Public Library *(Cleveland, OH)*	*http://www.cpl.org/*	generated	

Columbus Metropolitan Library *(Columbus, OH)*	*http://www.cml.lib.oh.us*	mixed	generated + <author>
Community Public Library *(Leetonia, OH)*	*http://www.leetonia.lib.oh.us/*	generated	
Community Library *(Sunbury, OH)*	*http://community.lib.oh.us*	mixed	generated + <author>, <description>, <keywords>
Community Public Library *(St. Marys, OH)*	*http://library.norweld.lib.oh.us/stmarys/*	none	
Conneaut Carnegie Public Library *(Conneaut, OH)*	*http://www.conneaut.lib.oh.us*	generated	
Coshocton Public Library *(Coshocton, OH)*	*http://www.coshocton.lib.oh.us*	none	
Cuyahoga County Public Library *(Parma, OH)*	*http://clio1.cuyahoga.lib.oh.us/home/index*	none	
Dayton & Montgomery County Public Library *(Dayton, OH)*	*http://www.dayton.lib.oh.us/*	generated	
Defiance Public Library *(Defiance, OH)*	*http://www.defiance.lib.oh.us/*	none	
East Palestine Memorial Public Library *(East Palestine, OH)*	*http://www.east-palestine.lib.oh.us*	generated	
Evergreen Community Library *(Metamora, OH)*	*http://library.norweld.lib.oh.us/evergreen*	none	
Fairfield County District Library *(Lancaster, OH)*	*http://netra.clc.lib.oh.us/fcd/*	generated	
Findlay Hancock County District Library *(Findlay, OH)*	*http://www.findlay.lib.oh.us/*	generated	
Garnet A. Wilson Public Library of Pike County *(Waverly, OH)*	*http://www.pike.lib.oh.us*	none	
Girard Free Library *(Girard, OH)*	*http://www.girard.lib.oh.us/*	none	
Grand Valley Public Library *(Orwell, OH)*	*http://www.grandvalley.lib.oh.us/*	generated	
Greene County Public Library *(Xenia, OH)*	*http://www.gcpl.lib.oh.us*	generated	
Harbor-Topky Memorial Library *(Ashtabula Harbor, OH)*	*http://www.harbortopky.lib.oh.us*	generated	

Harris-Elmore Public Library *(Elmore, OH)*	*http://library.norweld.lib.oh.us/Harris-Elmore/*	none	
Henderson Memorial Library Association *(Jefferson, OH)*	*http://www.henderson.lib.oh.us*	generated	
Herbert Wescoat Memorial Library *(McArthur, OH)*	*http://www.vintoncountypublic.lib.oh.us*	none	
Highland County District Library *(Hillsboro, OH)*	*http://family.hopewell.net/hcdl/*	generated	
Holmes County District Public Library *(Millersburg, OH)*	*http://www.molo.lib.oh.us/home/holmes/default.htm*	none	
Hubbard Public Library *(Hubbard, OH)*	*http://www.hubbard.lib.oh.us*	standard	Dublin Core Metadata Elements Set
Huron Public Library *(Huron, OH)*	*http://library.norweld.lib.oh.us/Huron*	generated	
Ida Rupp Public Library *(Port Clinton, OH)*	*http://library.norweld.lib.oh.us/IdaRupp/*	generated	
Jackson City Library *(Jackson, OH)*	*http://www.jacksoncity.lib.oh.us*	none	
Kaubisch Memorial Public Library *(Fostoria, OH)*	*http://library.norweld.lib.oh.us/Kaubisch/*	none	
Kingsville Public Library *(Kingsville, OH)*	*http://www.kingsville.lib.oh.us*	generated	
Kinsman Free Public Library *(Kinsman, OH)*	*http://www.kinsman.lib.oh.us/*	generated	
Lakewood Public Library *(Lakewood, OH)*	*http://www.lkwdpl.org*	generated	
Lepper Public Library *(Lisbon, OH)*	*http://www.lepper.lib.oh.us*	generated	
Liberty Center Public Library *(Liberty Center, OH)*	*http://library.norweld.lib.oh.us/LibertyCenter/*	none	
Logan County District Library *(Bellefontaine, OH)*	*http://www.loganco.lib.oh.us/*	none	
Mansfield-Richland County Public Library *(Mansfield, OH)*	*http://www.mrcpl.lib.oh.us/*	free	<keywords>
Martins Ferry Public Library *(Martins Ferry, OH)*	*http://mfpl.org*	generated	
Mason Public Library *(Mason, OH)*	*http://www.masonpl.lib.oh.us*	generated	
Massillon Public Library *(Massillon, OH)*	*http://www.massillon.lib.oh.us*	none	

McComb Public Library *(McComb, OH)*	*http://library.norweld.lib.oh.us/McComb*	free	<keywords>
McKinley Memorial Library *(Niles, OH)*	*http://www.mckinley.lib.oh.us/*	none	
Medina County District Library *(Medina, OH)*	*http://www.medina.lib.oh.us*	none	
Meigs County Public Library *(Pomeroy, OH)*	*http://www.meigs.lib.oh.us*	generated	
Mentor Public Library *(Mentor, OH)*	*http://www.mentor.lib.oh.us*	generated	
Minerva Public Library *(Minerva, OH)*	*http://www.minervaohio.com/library.htm*	free	<description>, <keywords>
Montpelier Public Library *(Montpelier, OH)*	*http://library.norweld.lib.oh.us/Montpelier/*	none	
Morley Library *(Painesville, OH)*	*http://www.morleylibrary.org*	generated	
Nelsonville Public Library *(Nelsonville, OH)*	*http://www.athens-county.lib.oh.us*	generated	
Newton Falls Public Library *(Newton Falls, OH)*	*http://www.newtonfalls.lib.oh.us/ http://www.newtonfalls.org/*	generated	
North Baltimore Public Library *(North Baltimore, OH)*	*http://library.norweld.lib.oh.us/North-Baltimore/*	free	<publisher>, <source>, <title>, <author>
Oak Harbor Public Library *(Oak Harbor, OH)*	*http://library.norweld.lib.oh.us/Oak-Harbor/*	free	<keyword>, <content>
Oak Hill Public Library *(Oak Hill, OH)*	*http://www.oakhill.lib.oh.us*	none	
Paulding County Carnegie Library *(Paulding, OH)*	*http://library.norweld.lib.oh.us/Paulding/*	generated	
Pemberville Public Library *(Pemberville, OH)*	*http://library.norweld.lib.oh.us/Pemberville/*	generated	
Portage County District Library *(Garrettsville, OH)*	*http://www.portagecounty.lib.oh.us*	generated	
Porter Public Library *(Westlake, OH)*	*http://ohionet.org/porter-public-library/index.htm*	none	
Portsmouth Public Library *(Portsmouth, OH)*	*http://www.portsmouth.lib.oh.us*	none	
Preble County District Library *(Eaton, OH)*	*http://www.pcdl.lib.oh.us*	none	
Public Library of Cincinnati and Hamilton County *(Cincinnati, OH)*	*http://plch.lib.oh.us*	free	<content>, <keywords>, <author>, <description>

Public Library of Mt. Vernon & Knox County *(Mt. Vernon, OH)*	*http://www.knox.net/knox/library/welcome.htm*	generated	
Puskarich Public Library *(Cadiz, OH)*	*http://winslo.state.oh.us/ppl/*	generated	
Putnam County District Library *(Ottawa, OH)*	*http://www.putnamco.lib.oh.us/*	none	
Rock Creek Public Library *(Rock Creek, OH)*	*http://www.rockcreek.lib.oh.us*	generated	
Rocky River Public Library *(Rocky River, OH)*	*http://www.rrpl.org/*	mixed	generated + <author>, <keywords>
Rodman Public Library *(Alliance, OH)*	*http://www.rodman.lib.oh.us/rpl/*	none	
Salem Public Library *(Salem, OH)*	*http://www.salemohio.com/library/*	free	<author>, <keywords>
Sandusky Library *(Sandusky, OH)*	*http://www.sandusky.lib.oh.us*	mixed	generated + <date>, <version>, <keywords>
Shaker Heights Public Library *(Shaker Heights, OH)*	*http://www.shpl.lib.oh.us/*	none	
Stark County District Library *(Canton, OH)*	*http://www.molo.lib.oh.us/home/stark/index.html*	none	
Stow-Munroe Falls Public Library *(Stow, OH)*	*http://www.ohionet.org/~stowpub/*	none	
Swanton Public Library *(Swanton, OH)*	*http://library.norweld.lib.oh.us/Swanton/*	none	
Sylvester Memorial Wellston Public Library *(Wellston, OH)*	*http://www.smwpl.lib.oh.us*	none	
Tiffin-Seneca Public Library *(Tiffin, OH)*	*http://www.tiffinsen.lib.oh.us/*	none	
Toledo-Lucas County Public Library *(Toledo, OH)*	*http://www.library.toledo.oh.us*	generated	
Twinsburg Public Library *(Twinsburg, OH)*	*http://www.Twinsburg.lib.oh.us*	generated	
Upper Arlington Public Library *(Upper Arlington, OH)*	*http://www.uapl.lib.oh.us*	none	
Warren-Trumbull County Public Library *(Warren, OH)*	*http://www.wtcpl.lib.oh.us/*	generated	
Washington-Centerville Public Library *(Centerville, OH)*	*http://www.wcpl.lib.oh.us*	generated	

Wauseon Public Library *(Wauseon, OH)*	*http://library.norweld.lib.oh.us/Wauseon*	generated	
Way Public Library *(Perrysburg, OH)*	*http://www.wcnet.org/~waylib*	none	
Wayne Public Library *(Wayne, OH)*	*http://library.norweld.lib.oh.us/Wayne/*	none	
Westerville Public Library *(Westerville, OH)*	*http://www.wpl.lib.oh.us/library/index.html*	none	
Weston Public Library *(Weston, OH)*	*http://library.norweld.lib.oh.us/Weston/*	generated	
Willard Memorial Library *(Willard, OH)*	*http://library.norweld.lib.oh.us/Willard*	none	
Williams County Public Library *(Bryan, OH)*	*http://www.williamsco.lib.oh.us/*	generated	
Willoughby-Eastlake Public Library *(Willoughby, OH)*	*http://www.wepl.lib.oh.us*	generated	
Wilmington Public Library of Clinton County *(Wilmington, OH)*	*http://www.wilmington.lib.oh.us/*	generated	
Wood County District Public Library *(Bowling Green, OH)*	*http://www.wcnet.org/WCDPL/*	generated	
Worthington Public Library *(Worthington, OH)*	*http://www.worthington.lib.oh.us/*	none	

On the basis of the table above web sites metatags distribution was determined. Results are represented in descending order in Table 3.

Table 3. Ohio public web sites metatags distribution.

Metatags Type	Number of Web Sites	%
Generated	47	45.3%
None	44	41.5%
Free	8	7.6%
Mixed	6	4.7%
Standard	1	0.9%

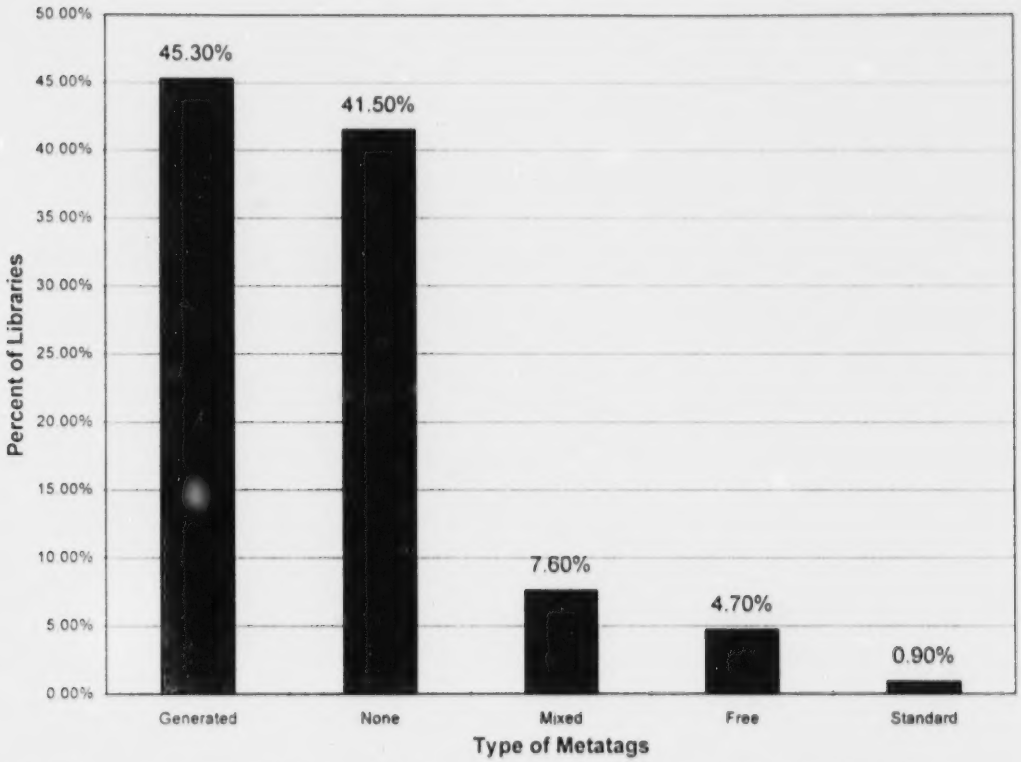

Figure 2. The distribution of Ohio public libraries with regard to their type of metatags usage.

To find out the most "popular" meta information in web sites metatag fields were examined and evaluated. All meta fields were divided into three groups: content fields (elements related to the content of the source), intellectual property fields (elements related mainly to the resource when viewed as intellectual property), and instantiation fields (elements related mainly to the instantiation of the resource). These divisions are based on Dublin Core Metadata Elements Set groups which roughly indicate the class or scope of information stored in them.

Table 4. Ohio public libraries web sites metatags fields.

I. Content fields (total frequency 26 (59%).		
Fields	**Frequency**	**%**
Keywords	12	46.1%
Description	4	15.3%
Subject	3	11.4%
Title	2	7.6%
Source	2	7.6%
Language	1	3.8%
Relation	1	3.8%
Coverage	1	3.8%

II. Intellectual Property fields (total frequency 12 (27%).		
Creator (Author)	8	66.6%
Publisher	2	16.6%
Contributor	1	8.4%
Rights	1	8.4%

III. Instantiation fields (total frequency 6 (14%).		
Date	2	33.2%
Type	1	16.7%
Format	1	16.7%
Identifier	1	16.7%
Version	1	16.7%

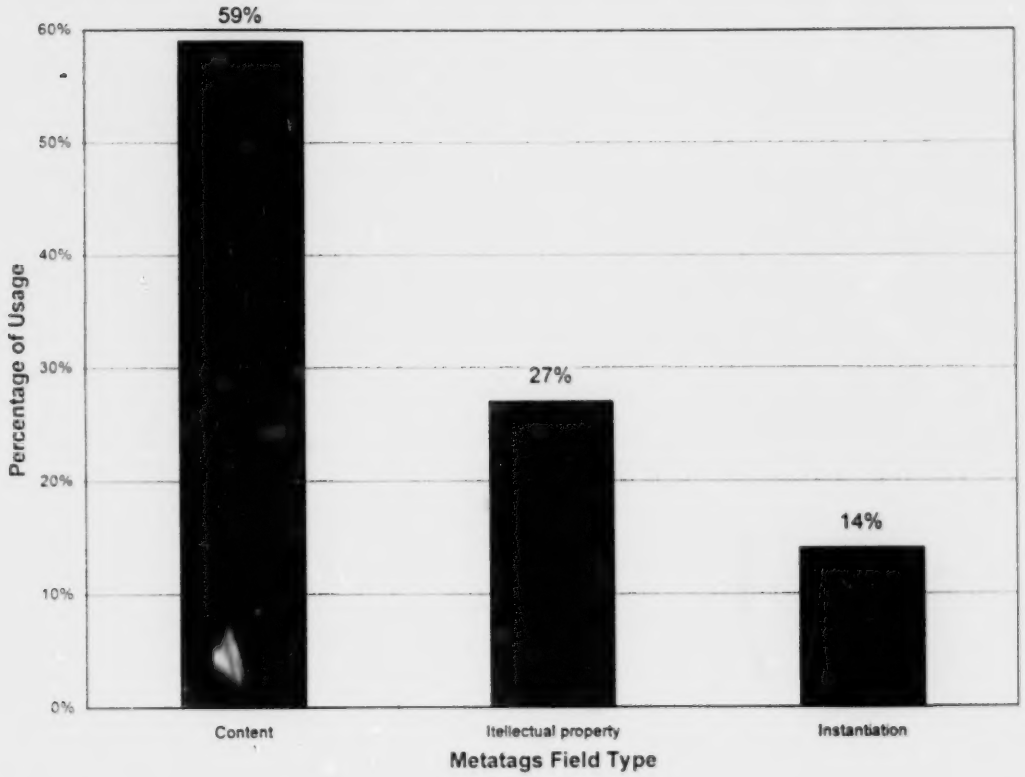

Figure 3. Percentage of metatag fields usage.

CHAPTER V

SUMMARY AND CONCLUSIONS

Results of the study show that high percentage (41.5%) of Ohio public libraries do not use metatags at all in their web pages. 45.3% web pages contain automatically generated meta tags which make no sense for indexing purposes. Most of the libraries which are really use metatags prefer mixed or free format. Only one library - Hubbard Public Library (Hubbard, OH) implements standard format (Dublin Core Metadata Elements Set).

Although it is hard to follow the tendency of metatags usage on such small and not representative set of data one could see that web masters prefer to include content fields (59%), intellectual property fields (27%) and instantiation fields (14%) in their web pages. Among content fields the most popular field is <*keywords*> (46.1%), intellectual property fields - <*author*> (66.6%), instantiation fields - <*date*> (33.2%).

According to the study it could be assumed that tentative de facto standard for metatags information might include <*keywords*>, <*description*>, <*author*>, and <*date*> fields. Most of the libraries implement information about their geographical location and some characteristics of library collection (e.g. "local history", "Ohio genealogy", "schools", "churches", "businesses", "organizations", "local government") inside their <*keywords*> field and title information inside their <*description*> field.

While examining the web pages of Ohio public libraries one noticed one more interesting fact: the more sophisticated is the web page - the less meta information is inside its HTML code. There are many fancy (even with Java applets) and well designed web pages with no metatags at all. It seems that professional web masters do not care about them because they do not have a clue about the problem. Information specialists (aka librarians) must be aware about power and convenience of metatags and have to educate and to convince web masters to use them.

Among other kinds of libraries public libraries are the most natural place to take advantage of metatags in web page design. It is well-known that public libraries serve their communities. In virtue of that along with almost standard set of reference books and modern popular trash paperbacks each public library collection must reflect the certain interests of the community it serves (e.g. public library in sea shore area might include more materials related to the see wild life in its collection). These differences between public libraries collections may be outlined in web page meta information. If so, the information about certain library collection could be accurately retrieved.

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